CLAIM REJECTIONS

A. 35 U.S.C. §102 Claims 1-9, 15-25 and 28-29

Claims 1-9, 15-25 and 28-29 stand rejected as being unpatentable over United States Patent No. 5,679,063, issued October 21, 1997 to *Kimura et al.*, (hereinafter referred to as "*Kimura*"). In response, the Applicants have amended independent claims 1, 16, 19 and 23 to more clearly recite aspects of the invention. Claims 28-29 have been cancelled without prejudice.

"Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim." *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1984)(citing *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 220 USPQ 193 (Fed. Cir. 1983). Here, *Kimura* fails to disclose each and every element of the claimed invention recited by independent claims 1, 16, 19 and 23, as amended.

The Examiner has asserted that each of the water supply nozzles 15A, 15B...15G having a needle valve meets the limitations of a first nozzle adapted to flow the polishing fluid at a first rate, and at least a second nozzle adapted to flow the polishing fluid at a second rate that is different than the first rate. However, the water applied to the polishing surface serves to control the concentration of polishing fluid disposed on the polishing surface by another bank of nozzles so that polishing rates can be controlled utilizing a distribution of polishing fluid having different concentrations along different regions of the polishing surface.

In contrast, claims 1, 16, 19 and 23 recite structure and methods for controlling the distribution of polishing fluid across a polishing surface by having different flow rates to the pad from a first and at least a second nozzle (or means) resulting in a greater volume of polishing fluid disposed on a first portion of the polishing surface by the first nozzle as it interfaces with the substrate than the polishing fluid of equal concentration disposed on a second portion of the polishing surface by the second nozzle as recited by independent claims 1, 16, 19 and 23. Controlling rates and/or amounts of polishing fluid delivered to a polishing surface that result in a controlled non-uniform distribution

of polishing fluid disposed across the polishing surface interfacing with the substrate is not the equivalent of controlling the concentration of polishing fluid across the polishing surface.

In a telephone conference between Examiner Shakeri and Keith Taboada on December 18, 2002, Examiner Shakeri indicated that *Kimura* at column 5, lines 46-64 teaches flowing water against the polishing cloth with flow rates that may vary between nozzles. However, teaching of Kimura cited by the Examiner describes a first nozzle for applying a polishing solution to a polishing cloth and a second nozzle for applying a dispersing solution to the polishing cloth. Both nozzles have needle valves to control the flow of solutions to the polishing pads. This enables the concentration of polishing solution applied by the first nozzle to be adjusted on the polishing cloth by mixing with the dispersing solutions. *See,* column 5, line 46 through column 6, line 36. Therefore, the section of *Kimura* cited by the Examiner does not teach nozzles that dispense fluids having the same concentration. Thus, as discussed above, *Kimura* does not teach or suggest an arm having nozzles or means that dispense a greater volume of polishing fluid on a first portion of a polishing surface as it interfaces with the substrate than the polishing fluid of equal concentration dispensed on a second portion of the polishing surface as recited by claims 1, 16, 19 and 23.

Therefore, *Kimura* does not disclose each and every element recited by independent claims 1, 16, 19 and 23. Thus, the Applicants submit that independent claims 1, 16, 19 and 23, and those claims depending therefrom, are patentable over *Kimura*. Accordingly, the Applicants respectfully request these rejections be withdrawn.

B. 35 U.S.C. §103 Claims 10 and 11

Claims 10 and 11 stand rejected as being unpatentable over *Kimura* in view of the Applicants' specification. In response, the Applicants have amended claim 1 from which claims 10 and 11 depend.

The Applicants assert a prima facie case of obviousness has not been established because, as discussed above, *Kimura* does not teach or suggest all of the limitations of claim 1, as amended, from which claims 10 and 11 depend. Thus, the

issue of whether the Applicants' specification teaches specific types of polishing material used is moot. Therefore, the Applicants submit that claims 10 and 11 are patentable over *Kimura* in view of the Applicants' specification. Accordingly, the Applicants respectfully request these rejections be withdrawn.

C. 35 U.S.C. §103 Claim 12-14

Claims 12-14 stand rejected as being unpatentable over *Kimura*. In response, the Applicants have amended claim 1 from which claims 12-14 depend.

As discussed above, *Kimura* does not teach or suggest all the limitations of independent claim 1, as amended. Thus, Applicants assert that a prima facie case of obviousness has not been established because, as discussed above, *Kimura* teaches or suggests all of the limitations of claim 1, from which claims 12-14 depend.

Therefore, the Applicants submit that claims 12-14, are patentable over *Kimura*. Accordingly, the Applicants respectfully request these rejections be withdrawn.

D. 35 U.S.C. §103 Claims 26 and 27

Claims 26 and 27 stand rejected as being unpatentable over *Kimura* in view of United States Patent No. 5,433,650, issued July 18, 1995 to *Winebarger* (hereinafter referred to as "*Winebarger*"). In response, the Applicants have amended claim 23 from which claims 26 and 27 depend.

As discussed above, *Kimura* does not teach or suggest all the limitations of independent claim 23, as amended, from which claims 26 and 27 depend. *Winebarger* teaches a method for monitoring and adjusting polishing rate using a block of optical quarts. *Winbarger* does not teach or suggest flowing polishing fluid of the same concentration onto a pad at a first location at a first rate and at a second location at a second rate that is different from the first rate. Therefore, the combination of *Kimura* in view of *Winebarger* also does not teach or suggest flowing polishing fluid of the same concentration onto a pad at a first location at a first rate and at a second location at a second rate that is different from the first rate.

Therefore, the combination of Kimura, in view of *Winebarger*, does not disclose each and every element recited by independent claim 23 and thus, cannot render obvious claims 26 and 27 that depend therefrom. Therefore, the Applicants submit that claims 26 and 27 are patentable over *Kimura* in view of *Winebarger*. Accordingly, the Applicants respectfully request these rejections be withdrawn.

CONCLUSION

Thus, the Applicants submit that all claims now pending are in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issuance are earnestly solicited.

If, however, the Examiner believes that any unresolved issues still exist, it is requested that the Examiner telephone Mr. Keith Taboada at (732) 530-9404 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

Jan 24, 2003

KEITH TABOADA, Attorney
Reg. No. 45,150
(732) 530-9404

Moser, Patterson & Sheridan, LLP
595 Shrewsbury Avenue
Suite 100
Shrewsbury, NJ 07702

Please continue to send all correspondence to:

Patent Counsel
Applied Materials, Inc.
P.O. Box 450A
Santa Clara, CA 95052

APPENDIX I

MARK-UP OF AMENDED CLAIMS

1. (Amended) A system for delivering a polishing fluid to a chemical mechanical polishing surface comprising:

a rotating polishing material having an upwardly facing polishing surface for polishing a substrate thereon;

an arm having a delivery portion disposed at least partially over the polishing surface;

a first nozzle disposed on the delivery portion and adapted to flow the polishing fluid at a first rate; and

at least a second nozzle disposed on the delivery portion and adapted to flow the polishing fluid at a second rate that is different than the first rate; wherein the first nozzle dispenses a greater volume of polishing fluid on a first portion of the polishing surface as it interfaces with the substrate than the polishing fluid of equal concentration dispensed on a second portion of the polishing surface by the second nozzle.

16. (Amended) A system for delivering a polishing fluid to a chemical mechanical polishing surface comprising:

a polishing surface adapted to polishing a substrate in contact therewith;

an arm having a delivery portion disposed at least partially over the polishing surface;

a first means for providing polishing fluid to the polishing surface at a first rate; and

a second means for providing polishing fluid to the polishing surface at a second rate, wherein [the second rate is different than the first rate.] the first means flows a greater volume of polishing fluid on a first portion of the polishing surface as it interfaces with the substrate than the polishing fluid of equal concentration disposed on a second portion of the polishing surface by the second means.

19. (AMENDED) A system for delivering a polishing fluid to a chemical mechanical polishing surface comprising:

a platen supporting the polishing surface;

a polishing head disposed over the platen and adapted to hold a substrate against the polishing surface;

an arm having a delivery portion disposed at least partially over the polishing surface;

a first nozzle disposed on the delivery portion and adapted to flow the polishing fluid at a first rate to a first portion of the polishing surface; and

at least a second nozzle disposed on the delivery portion and adapted to flow the polishing fluid at a second rate that is different than the first rate[.] to a second portion of the polishing surface, wherein the polishing fluid flowed on the first portion has a greater volume as it interfaces with the substrate than the polishing fluid of equal concentration flowed on the second portion by the second nozzle.

23. (AMENDED) A method of supplying a polishing fluid to a chemical mechanical polishing surface comprising:

flowing [the] polishing fluid onto [the] a rotating polishing pad at a first location at a first rate; and

flowing [the] polishing fluid of equal concentration on the polishing pad at a second location at a second rate that is different than the first rate, wherein the polishing fluid disposed on the first portion has a greater volume as it interfaces with a substrate being polished than the polishing fluid disposed on the second portion.

28. (Cancelled) The system of claim 1, wherein the polishing fluid flowing from first nozzle and the second nozzle has the same concentration.

29. (Cancelled) The system of claim 23, wherein the polishing fluid flowing onto the pad at a first location and the polishing fluid flowing onto the pad at a second location has the same concentration.

30. (New) A system for delivering a polishing fluid to a chemical mechanical polishing surface comprising:

a rotating polishing material having an upwardly facing polishing surface for polishing a substrate thereon;

an arm having a delivery portion disposed at least partially over the polishing surface;

a first nozzle coupled to the delivery portion and supported over a first zone defined on the polishing material by a volume of polishing fluid provided by the first nozzle; and

at least a second nozzle coupled to the delivery portion and supported over a second zone defined on the polishing material by a volume of polishing fluid provided by the second nozzle that is different than the volume provided to the first zone, wherein the polishing fluid in the first zone and the second zone have equal concentration when rotated into contact the substrate.

31. (New) A system for delivering a polishing fluid to a chemical mechanical polishing surface comprising:

a rotating polishing material having an upwardly facing polishing surface for polishing a substrate thereon;

a first zone defined on the polishing material having a first volume of polishing fluid disposed thereon;

a second zone defined on the polishing material radially inward of the first zone and having a volume of polishing fluid disposed thereon that is different than a volume of polishing fluid of the same concentration disposed on the first zone when contacting the substrate positioned on the polishing material; and

an arm having a first nozzle and a second nozzle coupled thereto, the first nozzle positioned to deliver a first flow of polishing fluid to the first zone, and the second nozzle positioned to deliver a second flow of polishing fluid to the second zone that is different than the first flow.

32. (New) The system of claim 31 further comprising a flow control device coupled to at least one of the first or second nozzles.

33. (New) The system of claim 32, wherein the flow control device is a flow control selected from the group consisting of orifices, needle valves, proportional valves, pinch valves, restrictors, mass flow controllers and metering pumps.

34. (New) The system of claim 31, wherein the arm further comprises a polishing fluid delivery line disposed within the arm coupling the first and second nozzles.

35. (New) The system of claim 31 further comprising a first fluid source coupled to the first nozzle and a second fluid source coupled to the second nozzle.

36. (New) The system of claim 31 further comprising a plurality of independently controllable nozzles coupled between the first and second nozzles, the independently controllable nozzles adapted to flow polishing fluid at a controlled rate.

37. (New) The system of claim 31, wherein first flow is at least 1.15 times the second flow rate.

38. (New) The system of claim 31, wherein first flow is about 1.2 to about 20 times the second flow rate.

39. (New) The system of claim 31 further comprising a metrology device adapted to provide information utilized to control at least one of the flows through the nozzles.